THE RELATIONSHIP BETWEEN SELF-CONCEPT AND ACADEMIC ACHIEVEMENT AMONG GIFTED ELEMENTARY SCHOOL STUDENTS

By

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A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF
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TO LAUREN

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The purpose of this study was to investigate the relationship between self-concept and academic achievement in third, fourth, and fifth grade public school gifted children. The data were also analyzed to test for significant differences between self-concept scores by achievers-underachievers, males-females, grade levels, and interactions.

The sample consisted of 153 children in a North Central Florida school district. They were identified as gifted through individual administration of the Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974). Criterion level was set at Full Scale I. Q. equal to or greater than 125. Achievement was measured by individual administration of the Wide Range Achievement Test (Jastak and Jastak, 1965). Gifted children obtaining averaged academic achievement two years above grade level expectations on this measure were defined as achievers. Gifted children obtaining averaged academic achievement not over two years above grade level

expectations were defined as underachievers. Self-concept was measured by the Piers-Harris Children's Self-Concept Scale (Piers, 1969).

Pearson's product-moment correlational technique was used to test for relationships between the variables investigated. A 3 x 2 x 2 analysis of variance was used to test for differences in self-concept scores by Achievement/Sex/Grade. Scheffe's A Posteriori test of pairwise comparisons for unequal N's was used to determine the location of significant differences between means. Level of significance was set at .05.

Significant positive relationships were found to exist between self-concept scores and averaged academic achievement for the total sample, females, and achieving females.

When differences between group means of self-concept scores were examined, it was found that achievers, regardless of sex or grade, obtained significantly greater self-concept scores than did underachievers. No significant differences in self-concept scores were found to exist between sexes. However, achieving females' self-concept scores were consistently greater than those of all other groups. The self-concept scores of underachieving females were consistently lower than those of all other groups. Further, a general trend was observed in the direction of decreasing self-concept scores among fifth grade subjects.

Among achieving subjects, as grade level increased, mean norm-referenced reading and spelling achievement levels increased proportionately. This was not true for mean arithmetic achievement levels among achieving subjects. Among underachieving subjects, no increase in mean norm-referenced grade level functioning was observed for any of the three subject areas measured.

The implications of these results are discussed with respect to the roles of school psychologists, elementary school counselors, and teachers of gifted elementary school children. Limitations of the study and suggestions for further research are indicated.

CHAPTER I
INTRODUCTION

Published knowledge thus far has failed to demonstrate conclusively a relationship between academic achievement and self-concept among gifted elementary school children (Department of Special Services, 1961; Culbertson, 1972). The bulk of research in this area has investigated the relationship between underachievement and personality and intellective variables in high school and college age populations of normal and gifted intelligence (Gough, 1949); Shaw and Grubb, 1958; Pierce, 1961; Wylie, 1961; Fink, 1962; Norfleet, 1968). In gifted adolescent populations, significantly positive relationships have been reported between underachievement and lack of motivation (Bish, 1963); desire for peer acceptance (Sumption and Luecking, 1960); excessive authoritarianism in school (Applebaum, 1959); poor teaching (French, 1959); and a complex of personality characteristics as measured by the California Personality Inventory (Gallagher, 1964). In an APGA publication (1961) underachievement among groups of gifted adolescents has been shown to be related to parental overprotection, authoritarianism, permissiveness, and large families.

Among bright male elementary school children, Walsh (1956) using the Driscoll Playkit, and Bruck and Bodwin (1962) using the Draw-a-Person Test found underachievement

to be related to projected weaknesses in adaptive behaviors. Additionally, in elementary school age populations of average intelligence, investigators have demonstrated a significantly positive relationship between attitudes toward school and achievement as measured by teacher grading (Barrett, 1957) and level of aspiration and academic achievement as measured by the Iowa Test of Basic Skills (Caplin, 1966).

Several investigators have researched the relationship between academic achievement and self-concept. Among a college age population, Jervis (1959) failed to demonstrate a relationship between self-concept and actual or predicted achievement, or between self-concept and attitudes toward others. Research on 223 elementary school males of 120+ I. Q. (Revised Stanford-Binet, L-M) by the Department of Special Services Staff, Champaign, Illinois (1961) failed to find self-concept to be related to school achievement. Moreover, the research concerning underachieving females regardless of intellectual ability, is vague and inconsistent (Fink, 1962; Campbell, 1965; Bledsoe, 1967; Baum et al., 1968; Mehta, 1968).

The outcome of these varied researches largely has been the stimulation of programs designed for the remediation of affective and academic difficulties. However, these special treatments have been reported to have varied effects on the variables investigated.

Mallinson (1963) reported on the effect of three types of treatment on improving personal adjustment and school achievement among intermediate grade gifted underachievers. The subjects had been determined gifted by previous group tests, and their underachievement was determined through the use of teachers' grades. The three treatments provided were: (1) a human relations group which discussed feelings and interpersonal dynamics (N=10); (2) an academic group which focused on discussion and presentation of academic material (N=11); (3) individual counseling which focused on personal feelings and peer relations (N=8); (4) a control group which received no treatment (N=8). Treatment groups one and two met weekly for 1-1/2 hours through the year. The individual counseling group received one hour per week individual counseling sessions throughout the year. No specific counseling technique or orientation was used. At the end of the year, groups one and two made significant gains on personal adjustment indices. No groups exhibited significant academic improvement. Mallinson (1964) followed his original study with a post-treatment evaluation one year after the conclusion of the original treatment period. He reported that the human relations group (group one) had continued to gain in personal adjustment, and had made significant academic gains over the other three groups. Mallinson fails to report whether the original groups were equalized for intellectual ability.

The effects of similar treatment upon adolescent populations have been investigated. Finney and Van Dalsem (1969) sought to ascertain the outcome of group counseling on gifted underachieving high school sophomores. The experimental group (N=69) participated in weekly group meetings over four semesters. The groups discussed personal and academic difficulties encountered in their daily lives. A control group (N=85) received no treatment for the duration of the investigation. The students were determined gifted on the basis of a score at or above the 75th percentile in Verbal and Numerical reasoning on the Differential Aptitude Test Battery. Underachievers were identified on the basis of teachers' grades. Grade Point Average and scores on the College Study Methods Survey were examined pre- and post-treatment. The authors reported no statistically significant differences were detected on the measures used.

Culbertson (1972) compared the effects of individual versus group counseling on the attitudes of gifted elementary school children. The investigation was designed to detect changes in attitudes toward self and school as a function of the treatment offered. Ninety fourth, fifth, and sixth grade gifted children were divided into three groups. Group one received individual counseling; group two received group counseling; group three served as controls. The experimental groups received treatment once a week for a period of eight weeks. Burks' School

Attitude Survey and the Piers-Harris Children's Self-Concept Scale were administered as pre- and post-tests. Culbertson reports that no statistically significant differences were demonstrated. Criteria for group selection were not included. Overall, the data gathered to date regarding the relationship between self-concept and academic achievement among gifted students are inconclusive. While these findings are equivocal, theoretical bases are extant which provide heuristic value.

Brookover's (1967) longitudinal research, conducted over six years, followed a population of 1000 students from the seventh to the twelfth grade. The most salient feature of his research indicates that a student's self-attitudes can limit the level of his or her achievement in school. This follows Lecky's theory of self-consistency (1945): all behavior represents the attempt(s) by the organism to maintain its own organization. Cognitive dissonance, as presented by Festinger (1958), may act as a motivating force wherein reality, value, and possibility assumptions contradictory to those held by an individual result in anxiety until reconciliation of differences occurs. An individual perceives, feels, and behaves in a manner consonant with the self-concept (Rogers, 1947; Combs & Snygg, 1959). In the words of Anastasi (1968), "... the self-concept operates as a sort of private self-fulfilling prophecy" (p. 577).

On the basis of the above discussion, it appears appropriate to hypothesize that primarily non-intellective variables are responsible for discrepancies between levels of ability and demonstrated academic achievement. Further, since previous studies in the area have failed to demonstrate significant findings, the methodology of these studies has been examined. Teachers' grades to determine achievement, and group tests of intelligence to determine giftedness have been used as methods of identification and selection of sample populations. As theory and research indicate, the hypothetical construct of self-concept may be the controlling variable in school achievement among average intelligence populations.

The present research investigates the degree to which the relationship between self-concept and academic achievement is observable among a population of gifted elementary school children. This research uses an individually administered measure of intelligence to define the population. A cut-off point was established to include the upper 5% of the elementary school population (one and two-thirds standard deviations above the mean). Levels of academic achievement were assessed through individual examination instead of teachers' grades or group achievement tests. Definitions of achieving and underachieving gifted elementary children based on previous research findings are included as well as an operational definition of self-concept.

Purpose of the Study

The purposes of this study were to: (1) investigate the relationship between the self-concept and academic achievement in 3rd, 4th, and 5th grade public school gifted children; and (2) compare the self-concept of achievers and underachievers overall and by grade and sex.

Operational Definitions

1. Gifted Child: a third, fourth, or fifth grade child who is enrolled in a public school and whose Full Scale I. Q. (as measured by the Wechsler Intelligence Scale for Children - Revised) equals or exceeds 125.
2. Gifted Achieving Child: A third, fourth, or fifth grade child whose Full Scale I. Q. (as measured by the Wechsler Intelligence Scale for Children - Revised) equals or exceeds 125 and whose averaged academic performance (as measured by the Wide Range Achievement Test) is at a level two years beyond indicated grade level expectations (Terman, 1926; Durr, 1960; Namy, 1967; Renz, 1968; Osen, 1973).
3. Gifted Underachieving Child: A third, fourth, or fifth grade child whose Full Scale I. Q. (as measured by the Wechsler Intelligence Scale for Children - Revised) equals or exceeds 125 and whose averaged academic performance (as measured by the Wide Range Achievement Test) does not exceed two years beyond indicated grade level expectations (Shaw, 1959; Kincaid, 1969).

4. Self-Concept: Expressed evaluative perceptions of the self by a child with respect to behavior at home and school, feelings of intellectual and school status, feelings about physical appearance and attributes, expressions of anxiety, popularity among peer groups, and general feelings of happiness and satisfaction as measured by the Piers-Harris Children's Self-Concept Scale (Piers, 1969).

Hypotheses

1. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted children.
2. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted males.
3. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted females.

4. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving children.
5. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving females.
6. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving males.
7. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving children.
8. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement

as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving females.

9. There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving males.

10. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to achievement.

11. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to sex.

12. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to grade.

13. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement and sex.

14. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement and grade.

15. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of sex and grade.

16. There are no significant differences in third, fourth, and fifth grade gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement, sex, and grade.

CHAPTER II
REVIEW OF THE LITERATURE

Germinal to this review are studies which have sought to define "giftedness" and self-concept, and those which have sought to demonstrate the relationship between achievement and non-intellective variables among gifted populations. The literature reviewed pertains to research within the parameters of the "intra-personal educational environment" (Tuel and Wursten, 1965), conceptualized as "those personality traits influencing learning which an individual brings to the educational setting" (p. 59). In addition, literature relevant to the validity and reliability of the Wechsler Intelligence Scale for Children - Revised, the Wide Range Achievement Test, and the Piers-Harris Children's Self-Concept Scale is discussed.

The Self-Concept

The concept of "self" has received a plethora of definitions and meanings. From the time of Homer (Wylie, 1961) a dichotomy has been expressed in terms of the body and the "psyche" or soul (Diggory, 1966). It appears that Freud's "Ich" or ego (1953) was the premier appearance of a psychological construct of an awareness of the self as subject and object.

Allport (1943) has listed eight ways in which "self" has been conceptualized: (1) as knower; (2) as object of knowledge; (3) as primordial selfishness; (4) as dominator; (5) as passive organizer and rationalizer; (6) as a fighter for ends; (7) as one segregated behavioral system among others; (8) as a subjective patterning of cultural values. An overview of current "self" definitions yields the observation that most theorists see the "self" as a group of psychological processes governing behavior and adjustment, and/or as an organized collection of attitudes, beliefs and feelings referent to the self. Hall and Lindzey (1970) term the first meaning of "Self" as the "Self-in-Process." That is, the self is a "doer, in the sense that it consists of an active group of processes such as thinking, remembering, and perceiving" (Hall and Lindzey, 1970, p. 516).

James' (1961) "I" (the self as knower) and the "Me" (the self as known) was a repetition of the usual dichotomization of the global concept of Self that had its historical precedents in the writings of Descartes and Kant. James further developed the "Me" into the material me (possessions), the social me (esteem from others), and the spiritual me (active-feeling state of consciousness) (James, 1961, pp. 43-48). The "I" consisted of "that which at any given moment is conscious" (p. 62). Here, James elaborated the conceptualization of the self into parts, known today in current psychological construct vernacular as "self-concept."

Freud's "Ego" construct closely parallels what is presently thought of as self. The ego is the "who-I-am", "what-I-am-doing" aspect of the personality (Freud, 1933). Jung's concept of "Self" (1945, p. 219) was presented as a motivator and constantly developing process. Neo-Freudian psychologists (Adler, 1927; Horney, 1945; Sullivan, 1953) at times equate "Ego" with self, but the term yet retains the "Self-in-Process" conceptualization (Hartmann, 1964, p.287).

A second definition of the self is the "Self-as-Object" (Hall and Lindzey, 1970, p. 516). This denotes a person's feelings, perceptions, attitudes, and evaluations of the self as an object. This is what the person thinks of himself. The term "Self-Concept" (Raimy, 1948) as used in this study, is pertinent to this definition. James' "Me" (1961, p.43), Jung's "Conscious Ideal" (1945, p. 219), Adler's "Self Ideal" (1927), and Sullivan's "Personification" (1953) may be subsumed under the "Self-as-Object" or "Self-Concept" definition.

Raimy's (1948) work contained the first appearance of the term "Self-Concept" in reference to clinical processes. The term was referred to as the "map which each person consults in order to understand himself, especially during moments of crisis or choice" (p. 155). Raimy's definition for this term was "the more or less organized perceptual object resulting from present and past self-observation" (1948, p. 154).

In the phenomenological-perceptual school of thought the self-concept is seen as the "Self-as-Object" (Combs and Snygg, 1959; Rogers, 1951). That is to say, "Self-Concept" (as a body of perceptions, role definitions and self-descriptions) and "Self-Esteem" (pertaining to the valences placed on the self perceptions by the individual) are subsumed under the general term "Self-Concept." This may be seen in the following definition of self-concept:

> An organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements such as the perceptions of one's characteristics and abilities; the percepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as associated with experiences and objects; and goals and ideals which are perceived as having positive or negative valence. (Rogers, 1951, p. 21)

Other writers suggest alternate definitions of the self. Bills et al., (1951, p. 257) defined the self-concept as "the traits and values which the individual has accepted as definitive of himself." Jersild (1952, p. 51) writes of the self as a "composite of thoughts and feelings which constitute a person's awareness of his individual existence; his conception of who and what he is."

Strong and Feder (1961) have stated that "every evaluative statement that a person makes concerning himself can be considered a sample of his self-concept, from which inferences may then be made about the various

properties of that self-concept" (p. 170). Finally, Kinch (1963) defines the self-concept as "that organization of qualities that the individual attributes to himself" (p. 481). He defines "qualities" as roles and the individual's evaluation of those self roles.

Thus, as the above cited authors assert, the generic term "self-concept" involves aspects of self-description and self-evaluation -- both the denotative and connotative aspects of meaning. Additionally, as Rentz and White (1967) report, as a result of a factor analytic study of variables, the dichotomy of self-as-process and self-as-object may not be appropriate. Their findings do not support the orthogonality of the constructs. Therefore, as the research cited above indicates, the separation of terms into self-as-process and self-as-object may be more a result of academic polemicism than operational reality.

Definitions of Giftedness

It becomes evident that each study in the area utilizes its own concept of what is a "gifted" child or person. Most studies rely on an intelligence quotient derived by ratio or deviation methodology. Several writers have attempted to provide an underlying rationale for use of the term "gifted."

Historically, the distinction between genius and giftedness has centered on superior intellect versus a constellation of superior abilities. The period of major

interest in the study of genius (superior intellect) was prior to 1945. Since that time, articles have begun to deal with creative and otherwise gifted persons (Albert, 1969).

It appears that an author's philosophical and experiential background strongly affects the definition of gifted that is applied as criterion. Scheifele (1953), whose field is the education of exceptional children, wrote that "creativity, or originality, is the distinguishing characteristic of the work and behavior of the truly gifted child" (p. 2). Smaltz and Mathisen (1963) regard gifted students as the upper fifteen percent of the school population with respect to intellect, talent, physical or mechanical skills, and leadership ability. More recently, several writers have provided broader definitions of the term "gifted." Examples of this are Witty's (1953) definition: "A child (may) be referred to as 'gifted' when his performance in a worth-while type of human endeavor is constantly remarkable" (p. 312). Otto (1957) proposed defining the gifted child as "... any child with an I. Q. of 120 or over whose performance is constantly outstanding and having a potential value to the welfare of society" (p. 3). Renz (1968) writes that giftedness is a combination of "task proficiency" and "innovative behavior" and that the latter is based on the former. Gowan (Gowan and Demos, 1964) states that "an able or gifted child is one whose rate of development, with respect to time, on some personality variable of agreed social value is significantly larger

than the generality" (p. 7). Here, it seems, Gowan is subsuming cognitive and intellectual abilities under personality variables. Thus, although there is no single, widely accepted definition of what "giftedness" is, as Passow indicated was the case nearly 20 years ago (1956), the trend is toward a more inclusive interpretation of the term. However, in practice, the emphasis is still on the intellectually able.

Terman (1926), in his massive longitudinal study of genius, used the Stanford-Binet intelligence quotient of 130 or above (137+ on the 1937 Revision of the Stanford-Binet Scale) to define his final population of 643. Many other factors were found to be typical of this population and have been used as criteria for the identification of gifted persons. Several of these are maturity of interests, academic achievement well above grade level, and effective use of native abilities in varying situations.

Newland in 1959 called for a nationally recognized Binet cut-off point for the use of the term "gifted", while the same year, Fliegler and Blish (1959) were promulgating the view that I. Q. in itself was too narrow a definition of giftedness. In 1961 Newland made his earlier (1959) position more specific and suggested that gifted criterion be set at 120-125 I. Q. and above on the 1960 Stanford-Binet, or on the Verbal portion of the Wechsler scales. Newland later expanded his conceptualization to include creativity and high academic achievement,

and called for better descriptions of terms, sounder theory, and more cogent reporting of results (1963). A definition that appears to be directed toward intellectual and school performance has been offered by French (1966): "... the term gifted and talented (should) refer to those with intellectual or academic capabilities that exceed a majority of their age mates" (p. 4). The State of Florida's Department of Education encourages each school district to formulate and submit for approval district procedures for the selection of gifted children. A majority of district procedures state that a gifted child is one who has superior intellectual development or outstanding talent and is capable of high performance, including those students with demonstrated achievement or potential ability.

Guilford's theoretical structure of intellect (1956, 1959) has produced a model of intellect having three dimensions: operations, contents, and products. Operations are the major kinds of intellectual processes, and are presented below. The first type of operation, cognition, includes discovery, awareness, recognition, comprehension, or understanding. The second, memory, refers to retention of information, and the degree of availability of that information. The following two types of operations are produced from what has been cognized or memorized. Divergent productive thinking is the generation of new information based on previous information, when the emphasis is on variety and quantity of output. Convergent productive

thinking is the generation of information from given information where emphasis is placed upon achieving either unique or conventionally accepted outcomes (solutions). The fifth operation, evaluation, involves making decisions or judgments concerning the adequacy and appropriateness of information in terms of identity, consistency, and goal satisfaction. These five operations act on each of the contents of thinking (figural, symbolic, semantic, and behavioral) and on the products of thinking (units, classes, systems, transformations, and implications).

Bonsall and Meeker (1964) applied Guilford's theoretical model to an analysis of each item of each subtest on the Wechsler Intelligence Scale for Children. They report that each item is described by at least one factor, and in some cases, by as many as three Guilford factors. An excellent presentation of their work may be found in Glasser and Zimmerman's work, Clinical Interpretation of the Wechsler Intelligence Scale for Children (1967). Thus, in this study, giftedness refers to those children, third through fifth grades, who manifest the above factors of intellect outlined by Guilford, at or above one and two-thirds standard deviations above the mean, as demonstrated on and measured by the Wechsler Intelligence Scale for Children - Revised.

Intellective Characteristics of Gifted Children

Several investigators have sought to determine subtest patterns of gifted children on intelligence tests. Thompson

(1963) studied a population of 151 ten-year-old children with respect to their profiles on the Wechsler Intelligence Scale for Children. The criterion for giftedness was established a priori at 125 or more Full Scale I. Q. Results demonstrated that the children included in the study were consistently high in Information, Similarities, Picture Completion, Picture Arrangement, and Block Design subtests. Further, those five subtests were found to be significantly correlated (r = +.84) with the Full Scale I. Q. Lucito and Gallagher (1960) investigated a sample of 50 second through fifth grade children having a previous Stanford-Binet (L-M) I. Q. of 150+. The Wechsler Intelligence Scale for Children was again used to identify particular subtest patterns. The authors report that all scaled scores were one standard deviation above the mean. Highest mean scores were on Similarities, Block Design, Information, and Vocabulary; lowest mean scores among the group were observed on the Picture Arrangement and Picture Completion subtests.

After studying 64 children nominated for gifted programs, Namy (1967) reports several interesting findings. Namy's procedure was to divide the population into 32 "gifted" children (Wechsler Intelligence Scale for Children Full Scale I. Q. of 130 or above) and 32 "pseudo-gifted" children (below Wechsler Intelligence Scale for Children Full Scale I. Q. of 130). The mean I. Q. of gifted children was 126.49, mean I. Q. of pseudo-gifted

children was 110.28. Namy's data reflected teacher misdiagnosis of gifted children in 50% of the initial sample, replicating findings of Terman (1926), Pegnato and Birch (1959) and Weise et al. (1965). Namy further reports that pseudo-gifted children rely on memory to attain knowledge, while the gifted group relies on superior memory and higher cognitive processes to attain knowledge. This observation essentially replicates Thompson's 1963 study. In related investigations, House (1971), Golden (1970), Alam (1969), and Ripple (1961) analyzed accelerated and regular classrooms with respect to discussion content. In all studies, higher cognitive processes (ability to see abstract relationships and similarities, and to draw inferences from these) were observed in accelerated classes more than in regular classes.

Academic Achievement of Gifted Children

Terman's (1926) gifted group was found to be functioning from one and one-half to four years above expected chronological age tasks. Additionally, he reports:

> The accomplishment quotients of a considerable number of gifted children are higher than the teachers' marks given on the basis of daily performance in the classroom would lead one to expect. Presumably, in such cases the teacher has either under-estimated the child's accomplishment or has given low marks as a penalty to lack of application to the set tasks of the school. (p. 306)

In order to study the effects of accelerating gifted second grade age children to fourth grade placement,

Ripple (1961) made placement on the basis of achievement scores at two or more grade levels above chronological grade level expectations according to teachers' grades. He reports that the accelerated subjects continued to achieve two years beyond their chronological age after placement was effected. The accelerated subjects were also significantly higher than the third grade control group in the areas of arithmetic computation, problem-solving, and understanding of concepts. Lightfoot (1951), Hildreth (1954), Witty and Commer (1955), Witty and Blumenthal (1957), Klausmeier (1958), and Durr (1960) all report that the average general achievement of children with above average intelligence exceeded the average general achievement of randomly selected groups by two or more grade levels. In these studies however, the authors relied on teacher nomination of children for inclusion in their studies. Judging from previous research citing teacher misdiagnosis of gifted children in up to 50% of nominated cases (Terman, 1926; Pegnato and Birch, 1959; Weise et al., 1965; Namy, 1967) possibly half of the available gifted children were not included in the studies, presumably because their grades were not outstanding. Therefore, the optimum academic achievement level at which gifted children may be expected to function is at least two years beyond chronological grade level.

Krause (1962), in an eight-year longitudinal study, found gifted children to exhibit language development significantly earlier than children of average intelligence.

Most recently, Osen (1973) examined the relative predictive validity of three reading expectancy formulas. In addition to determining the Harris formula (1970) to be the best predicter, he found that the gifted subjects (identified by intelligence tests) in his study were from two to four years above grade level in reading achievement as measured by the Comprehensive Test of Basic Skills.

General Personality Factors Affecting Achievement Among Students

In reviews of research concerning the academic achievement of gifted persons, both Miller (1961) and Anderson (1961) conclude that personality factors play an integral role in underachievement and low achievement at upper levels of schooling. As Terman (1926) observed:

> At a given age there is practically no correlation between educational accomplishment and the number of terms the gifted child has attended school. The causes of school success and of school failure lie deeper. (p. 306)

To date, causality has not been determined. However a possible reciprocal relationship has been demonstrated by Gibby and Gibby (1967).

These authors were investigating the hypothesis that a student would suffer a loss of self esteem if he or she failed to meet personal expectations, in this case in an academic setting. Sixty subjects in two seventh grade classes were used. The classes had been established for bright and academically superior white children. All

subjects had experienced successful academic endeavors and were aware of the special placement. One classroom was used as a control group, the other as an experimental group. Both groups received a pre-treatment test battery which included an English grammar test, the Gibby Intelligence Rating Scale, and a word fluency test. After three days, both groups received the word fluency test again. However, prior to the second administration, the experimental group members were informed that they had done quite poorly on the test battery. The results revealed that the experimental group performed significantly less effectively than the control group. The authors inferred that this resulted from perceived loss of esteem, both self-esteem and esteem of self by others.

Additional research information has indicated that feelings of inadequacy among bright underachieving children act as depressors, causing them to withdraw and refuse further participation in challenging activities (Barrett, 1957). The effect of feelings of inadequacy on academic achievement was not examined in Barrett's study.

Fink (1962) studied two ninth grade groups of students with average intelligence. The groups were paired with respect to specific I. Q., race, and sex. One group had exhibited academic achievement, the other group had exhibited academic underachievement, as measured by teachers' grades. The self-concept was measured through the use of the California Personality Inventory, the

Bender Visual-Motor Gestalt Test, the Draw-A-Person Test, the Gough Adjective Checklist, a personal data sheet, and a student written essay titled "What I will be in 20 years." All data were submitted to three psychologists, who, independently of one another, inferred from the data an adequate or inadequate self-concept. Significant differences were demonstrated between the self-concepts of achievers and underachievers, in that adequate self-concepts were significantly associated with achieving students and inadequate self-concepts were associated with underachieving students. The relationship was significant among males but not among females. Irwin (1967) reports a study investigating the relationship between inferred self-concept and scholastic achievement among freshmen college students. Subjects were requested to take a sentence completion test, from which self-concept was inferred by judges. These data were then correlated with subjects' grade point averages. A significantly positive correlation was demonstrated. Irwin states:"It may well be that a positive conception of one's self as a person is not only more important than striving to get ahead and enthusiasm for studying and going to school, but that it is a central factor when considering optimal scholastic performances" (p. 271).

Other investigators have reported that the self-concept of male students is a more potent predictor of achievement than is I. Q. (Haarer, 1964). Still others

have demonstrated this to be true regardless of race (Morse, 1963; Caplin, 1966). However, these results were gleaned from populations of eighth and ninth grade children. Is there a relationship between an elementary school child's self-concept and achievement?

Wattenberg and Clifford (1964) examined a group of kindergarten children to attempt to answer this question. The self-concept was inferred by recording verbalizations made by the children as they drew pictures of their families and responded to self referent statements. The statements were judged to be high or low on feelings of "competence" and "goodness." The authors then measured the reading achievement of the children when they were in the second grade and correlated this with the childrens' feelings about themselves recorded in kindergarten. There was a significantly positive correlation observed between the two variables.

Using the same age group, but different data gathering techniques, Lamy (1965) investigated the relationship between children's perceptions of the self and world while in kindergarten, and subsequent reading achievement in the first grade. The self perceptions were inferred by trained observers with respect to feelings of competency and mastery of environment. When the data were analyzed, the self perceptions were equal in potency to the use of intelligence quotients as predictors of achievement. When I. Q. and self-evaluative statements were combined,

the predictive value of these two factors in relation to reading achievement was even stronger.

Is a high I. Q. predictive of a positive self-concept? Coopersmith (1967) concludes that it is not. Using the Coopersmith Self Esteem Inventory, Coopersmith reports that bright children found to be low in self esteem but held in high esteem by others, apparently disregard feedback disconsonant with their self-concept. He reports a coefficient of correlation of +.28 between subjective self esteem and intelligence.

Numerous writers have investigated high intelligence populations which were not achieving at a level commensurate with their abilities or even at grade level (Gough, 1949; Walsh, 1956; Barrett, 1957; Shaw and Grubb, 1958; Jervis, 1959; Sumption and Luecking, 1960; Pierce, 1961; Boris-low, 1962; Miller, 1962; Bish, 1963; Combs, 1964; Buch-in, 1966; Irwin, 1967; Norfleet, 1968; Seiden, 1969; Culbertson, 1972). The findings reported are not homo-logous since different specific personality characteristics have been used as dependent variables.

Basic descriptive research has, however, provided descriptors common to all research populations. Among gifted adolescents, underachievers are characteristi-cally represented by high ability scores and low grades (Cutts and Woseley, 1957; Shaw, 1959; Gallagher, 1964). This phenomenon appears to be related to a host of

personality variables. Gough (1949) and Shaw and Grubb (1958) examined bright high school students seeking to find a common denominator indigenous to those who "underachieved." After administering a battery of personality inventories to achievers and underachievers, similar conclusions were reached. A personality trait which was termed "hostility" was characteristic of bright underachieving students when compared with bright achieving students.

Non-intellective variables have produced the most salient discriminants among adolescents in investigating the difference between achievers and underachievers. Norfleet (1968) reports data gleaned from an examination of gifted high and low achieving women. The population, high school seniors, was selected on the basis of School and College Ability Test scores of 60 or better. Grade point average was computed to determine high and low achievers. The California Personality Inventory and the Gough Adjective Check List were then administered. Significant differences were detected on CPI scales of Responsibility, Socialization, Tolerance, and Achievement, high achievers scoring higher on these scales than low achievers.

Pierce (1961) studied 104 superior ability high school males in grades ten and twelve. School grades were averaged and high and low achievers were thus determined. The Parental Attitudes Research Instrument,

McClellands Projective Test of Achievement Motivation and the California Personality Inventory were used to investigate differences in personological variables between high and low achievers. Overall, Pierce reports that high achievers have more school related interests, reflect greater independence in life style, score higher on positive aspects of the CPI, and are more academically motivated than are low achievers.

Bish (1963) found underachievement and lack of motivation to be significantly correlated among underachieving gifted adolescents. The desire for peer acceptance also appears to mitigate against effective use of abilities among high ability adolescents, as Sumption and Luecking (1960) report. Seiden (1969) used a population of 132 male and 109 female high school students scoring in the top 15% on an intelligence test to investigate this point. The criterion for dividing these high ability students into high and low achievement groups was mean grades earned over one and one-half years of school (grades 10-11.5). Regardless of sex, members of the low achievement group generally avoided independent participation in intellectual activities, appeared disinterested in performing or studying, and avoided participation in student government. Further, Seiden reports that male low achievers used inner resources for problem-solving more than the members of other groups examined. He concludes that non-intellective factors such as study methods

and activity participation are the most reliable predictors of achievement among the population investigated.

In a study of 32 gifted elementary school children, Barrett (1957) used a 130+ I. Q. on the Henman-Nelson Advanced Test to identify the sample. It was determined that underachieving gifted children have negative attitudes toward school, and that those who did poorly in elementary school performed even worse in secondary school. Walsh (1956) examined the differential adaptive behaviors among 40 bright second, third, fourth, and fifth grade males. Twenty of these children were classified as low achievers and twenty as adequate achievers on the basis of classroom grades. The Driscoll Playkit was used to examine the different modes of play in the two groups. Walsh reports that low achievers used significantly more ineffective adaptive modes in play while achievers employed significantly more effective modes in the same activities.

The Relationship Between Self-Concept and Achievement in Gifted Persons

Most investigations dealing with the relationship of academic achievement to self-concept in gifted students have been conducted on adolescent or older populations. Significant findings tend to be confined to high school populations. For example, Jervis (1959) studied a college age sample and reported no significant correlation between self-concept and actual or predicted grades. Neither was there a relationship demonstrated between self-concept and attitude toward others.

After an investigation of achieving and underachieving college freshmen, Borislow (1962) reports that there were no significant differences between the two groups with respect to general self-evaluation. Further, among 175 college freshman and 167 college seniors Buchin (1966) reports no direct relationship between academic potential, college achievement, and self-concept. It should be noted that because of college selection procedures at their institutions, the authors mentioned above believe that identification of gifted students would be superfluous.

Studies involving bright high school students report more findings of a significant nature than do studies employing college age populations. Miller (1962) found that among superior ability high school students, underachievers were more negative in their attitudes toward self and others than were achievers. In order to examine the relationship between achievers and self perception, Combs (1964) selected a sample of 50 high school students whose I. Q. exceeded 115 as measured by the Wechsler Adult Intelligence Scale. He then divided the group into achievers and underachievers through the use of school grades. Students above the third quartile were classified as achievers, those below the first quartile were classified as underachievers. The Thematic Apperception Test and the Combs' School Apperception Test were administered to all subjects. Combs reports that underachievers saw themselves as less adequate than others and less acceptable to others.

He also observes that underachievers use inefficient approaches to problem-solving and exhibit less freedom and adequacy of emotional expression.

Mehta (1968) reports an investigation of bright male high school students in India. It was hypothesized that achievers and underachievers would differ with respect to self-concept. Subjects scoring above the 75th percentile of Jalota's Group Test of General Mental Ability were selected for participation in the study. The sample was then divided into achievers-underachievers on the basis of performance on a general school examination. A self-concept inventory was then administered. After the data were analyzed, it was found that achievers were characterized by positive aspects of the self-concept, and underachievers by negative aspects of the self-concept.

Studies involving the variables of self-concept and achievement among gifted elementary school children are not unequivocal. The Department of Special Services Staff in Champaign, Illinois (1961) studied a population of second, third, fourth, and fifth graders, all with a Revised Stanford-Binet (L) I. Q. of 120 or above. Teacher's grades were criteria. Forty-one female and male underachievers and overachievers were identified. Rogers' scale of Personal Adjustment was then administered. No significant differences were found.

Culbertson (1972) reports a study involving 90 gifted fourth, fifth, and sixth grade elementary school children. The study was designed to measure the effect of individual and group counseling on perceptions toward self and school. Burks' School Attitude Survey, and the Piers-Harris Childrens' Self-Concept Scale were administered pre- and post-treatment. Although no significant differences between the treatment groups were demonstrated, Culbertson relates several conclusions based on data gleaned from the two inventories. The gifted children in his sample exhibited negative feelings regarding their intellectual and school status, had a high level of anxiety, and held a high opinion of their physical appearance and attributes. Further, he reports that when the self-concept was strong, attitudes toward school were negative. The relationship between self-concept and achievement was not investigated.

Thus, although research on the interdependence between self-concept and academic achievement among adolescent populations has demonstrated significant relationships, the literature concerning the dimensions of self-concept and achievement among gifted elementary school children is sparse and inconclusive. Teachers' grades have been the criterion for definition of achieving and underachieving groups in a majority of these studies. Lack of reliability and validity data on this method of classification of groups may explain, in part, the results reported.

Identification of Gifted Students

This section will review methods of identification of gifted students used in investigations discussed in this chapter. Additional data will be presented on the relative efficacy of these methods and conclusions concerning effective selection procedures will be made.

Five major methods of identification may be seen from the studies reviewed. They are presented below with approximate percentages of studies cited employing these methods: (1) Teacher Judgment: 42%; (2) Group Intelligence Tests: 25%; (3) Individual Intelligence Tests: 21%; (4) Honor Roll Grades: 8%; (5) Group Achievement Tests: 4%. The method of teacher judgment holds a clear majority over the other methods. The question remains, is this the most effective and reliable way to identify gifted students in schools? Hill, Lauff, and Young (1957) investigated the relative discriminatory power of teacher judgment, cumulative grade averages, and individual I. Q. test scores in identifying gifted students. The authors report that of the 24 subjects included in their final sample, 90% would have been identified by teacher judgment alone. However, in 1959, Pegnato and Birch presented data that reflect different findings. The authors evaluated the relative efficacy of teacher judgment, group achievement tests, honor roll membership, and group intelligence tests as compared with the use of the Stanford-Binet intelligence test. "Gifted" criterion was set at 136+ I. Q. points.

All of the nearly 1400 children in a junior high school were administered the Stanford-Binet. Ninety-one children reached the 136+ I. Q. criterion. Teachers were then asked to prepare a list of students that the teachers considered gifted. Data on the other three measures being compared were obtained from school records. The results are presented in Table 1.

Table 1

Effectiveness of Different Measures of Identification of Gifted Children In A Junior High School

Method	Criterion	Number Identified	Correctly Identified	Mis-Identified	Over-Looked
Teacher Judgment	Mentally Gifted	154	41	113	50
Group Achievement Tests	Three grades over grade placement	335	72	263	19
Honor Roll	B Average or better	371	67	304	24
Group Intelligence Tests	Otis-B,I.Q. 115+	450	84	366	7
	120+	240	65	175	26
	130+	36	20	16	71

(Pegnato and Birch, 1959)

These data reflect teacher misdiagnosis in 50 of 91 cases. In comparison, group achievement and intelligence tests identified a much higher percentage of the group than did either honor roll membership or teacher judgment. These findings are in close agreement with those of Terman (1926) and, as mentioned earlier, with those of Weise et al. (1965) and Namy (1967).

The use of the Slosson Intelligence Test for identifying gifted persons has been examined by Machen (1972). Machen randomly selected 75 gifted children, ages 9 to 11 (25 in each age level) from a pool of 224 gifted students. All were previously identified as having a 125 Full Scale I. Q. on the Wechsler Intelligence Scale for Children. The SIT was then administered to the sample of 75. Machen reports that a significantly positive correlation between WISC Full Scale I. Q. and SIT I. Q. was found only at the nine year old level. At all age levels, significant mean differences of 15 points were shown to exist between all WISC Scale I. Q.'s and the SIT I. Q., with the SIT I. Q. higher than the WISC Scale I. Q.'s. Machen concludes that in light of the heavy emphasis on language skills and the discrepancies noted above, caution should be used with the interpretation of SIT I. Q. scores when attempts are made to identify elementary age gifted children.

The Research and Guidance Laboratory for Superior Students Staff at the University of Wisconsin (Rothney, 1967) encourages high school personnel in the area to rely on teacher nomination, teacher checklists of students, tests of mental ability and achievement, and honor roll membership to identify superior high school students. Dunlap (1967) presents essentially the same outline of procedures but has found that during individual testing, at the elementary school level, a useful procedure is to get

judgments of classmates for nomination of other children. On the basis of experiential data, he reasons that bright children themselves are usually aware of the abilities of their classmates.

Personnel in Florida school districts that have a program for gifted children employ a variety of techniques and methods to identify their population. Generally, these include teacher nomination, counselor nomination, principal nomination, parent nomination, review of past individual or group intelligence and achievement tests, a screening test (academic achievement or intelligence) and an individually administered battery of tests, including an intelligence test and an achievement test (State of Florida Department of Education, 1973, 1974).

It appears that a combination of procedures, using teacher, counselor, principal, and parent nomination, along with group tests or screening tests of intelligence, as well as early indicators of high ability such as readiness tests of basic skills are useful in identifying possible gifted students. Final determination should be made on the basis of individually administered intelligence scales such as the Wechsler Preschool and Primary Scale of Intelligence, the Wechsler Intelligence Scale for Children - Revised, the Wechsler Adult Intelligence Scale, or the Stanford-Binet (L-M).

Validity and Reliability of the Wechsler Intelligence Scale for Children - Revised

For the purposes of this study, the Wechsler Intelligence Scale for Children - Revised is the test of choice as opposed to the Stanford-Binet (L-M) for several reasons. An analysis of items on the Stanford-Binet (L-M) reveals an uneven distribution of performance items from one year to another. Therefore, in scoring the protocol, the basal and ceiling ages are doubled for performance items. This procedure spuriously inflates the obtained intelligence quotient. Additionally, there is a marked verbal-academic bias among Stanford-Binet (L-M) items. The above observations may in part explain why some investigators employ the Stanford-Binet (L-M) 150+ I. Q. as criteria for giftedness, as opposed to the Wechsler Intelligence Scale for Children - Revised 125-130 Full Scale I. Q. gifted criteria. The Wechsler Intelligence Scale for Children - Revised weights verbal and performance items quite evenly and, aside from yielding subtest and scale analysis of cognitive-perceptual functioning, affords a more accurate estimate of the intellectual ability of those individuals not blessed with a rich environment through the inclusion of the performance scale items. New normative data, including black and other non-white groups according to 1970 United States Census Bureau statistics, makes the norms of the Wechsler Intelligence Scale for Children - Revised more representative than those of the 1949 Wechsler Intelligence Scale for Children edition.

The validity of the Wechsler Intelligence Scale for Children - Revised is not discussed in the manual per se. Correlations of the 1949 Wechsler Intelligence Scale for Children with the Stanford-Binet have been found to cluster around +.80 (Reger, 1962; Sonneman, 1963; Tutt, 1964; Webb, 1964; Birkemeyer, 1965; Cordiner, 1965; Estes, 1965). Wechsler has calculated coefficients of correlation between the Wechsler Intelligence Scale for Children - Revised and the Stanford-Binet (L-M) (1972 norms). These are presented in Table 2.

Table 2

Coefficients of Correlation of I. Q.'s on Wechsler Intelligence Scale for Children - Revised with the Stanford-Binet (L-M) (1972 norms)

		Full Scale I. Q.	Verbal Scale I. Q.	Performance Scale I. Q.
AGES	6	+.82	+.77	+.74
	9-1/2	+.69	+.64	+.57
	12-1/2	+.63	+.66	+.51

Wechsler Intelligence Scale for Children - Revised administered first, Stanford-Binet (L-M) administered second.

(Wechsler, 1974, p. 52)

Reliability for the Wechsler Intelligence Scale for Children - Revised is included in the Wechsler Intelligence Scale for Children - Revised manual (Wechsler, 1974). Reliability coefficients for six age groups are reproduced in Table 3. The coefficients of the I. Q. scales were

obtained from the formula for the reliability of a composite group of tests (Guilford, 1954, p. 393).

Table 3

Reliability Coefficients for the Wechsler Intelligence Scale for Children - Revised I. Q. Scales by Age

	AGE GROUP					
	6	7	8	9	10	11
Verbal Scale I.Q.	.91	.92	.92	.94	.93	.95
Performance Scale I.Q.	.91	.90	.91	.91	.89	.91
Full Scale I.Q.	.95	.95	.95	.96	.95	.96

N = 200 for each age group

(Wechsler, 1974, p. 28)

A four-year follow-up study indicates that the Wechsler Intelligence Scale for Children I. Q. is about as stable as Stanford-Binet I. Q.'s over the same period of time. The Stanford-Binet I. Q. test - retest reliability coefficient was +.78, Wechsler Intelligence Scale for Children Full Scale I. Q.: +.77; Verbal Scale I. Q.: +.77; Performance Scale I. Q.: +.74 (Gehman and Matyas, 1956). Wechsler Intelligence Scale for Children - Revised test - retest reliability coefficients are presented in Table 4.

Table 4

Stability Coefficients of Wechsler Intelligence Scale for Children - Revised I. Q.'s for Two Groups of Children Tested Twice

		Verbal Scale I.Q.	Performance Scale I.Q.	Full Scale I.Q.
AGES	6 - 7 (N=97)	+.87	+.88	+.92
	10 - 11 (N=102)	+.93	+.88	+.95

The time interval between first and second testings ranged from three to five weeks for nearly all children

(Wechsler, 1974, p. 32)

Validity and Reliability of the Wide Range Achievement Test

The Wide Range Achievement Test (Jastak and Jastak, 1965) is a brief instrument useful in obtaining accurate estimates of individual achievement in the academic areas of spelling, reading, and arithmetic. Concurrent validity coefficients have been established by Jastak and Jastak (1946). These are presented in Table 5.

Table 5

Concurrent Validity Coefficients for the Wide Range Achievement Test

Measures	Validity Coefficient
WRAT Reading VS New Stanford Paragraph Reading	+.81
WRAT Reading VS New Stanford Word Reading	+.84
WRAT Spelling VS New Stanford Dictation Test	+.93
WRAT Arithmetic VS New Stanford Arithmetic	+.91

(Jastak, 1965, p. 16)

Split-half reliability coefficients are reported in the 1965 manual for each of the three subtests. Coefficients of correlation for each area computed for ages 5 to 12 are reported in Table 6.

Table 6

Split-Half Reliability Coefficients for WRAT Reading, Spelling, and Arithmetic

AREA	SPLIT-HALF RELIABILITY COEFFICIENT
Reading	+.98
Spelling	+.96
Arithmetic	+.95

(Jastak and Jastak, 1965, pp. 13-14)

Validity and Reliability of the Piers-Harris Children's Self-Concept Scale

The Piers-Harris Children's Self-Concept Scale was developed from a pool of childrens' statements about what they liked and disliked about themselves (Jersild, 1952; Piers and Harris, 1964). A preliminary pool of 164 statements was administered to 90 third, fourth, and sixth grade children. Items which were answered by fewer than 10% or more than 90% of the sample were dropped. Thus, 140 items remained, including a Lie scale. This revised scale was then administered to four third grade classes, four sixth grade classes, and four tenth grade classes. The elementary classes were chosen to represent a cross section of socioeconomic levels in the community. As a result of this administration, the Lie scale was dropped when no significant discriminatory function was demonstrated.

The present scale was derived from an analysis of 127 sixth graders' scores. The 30 highest and 30 lowest scores were identified, and Cureton's Chi Test (Lindquist, 1951) was computed on each item to determine significant discriminatory powers. Additionally, items answered in the expected direction by at least half of the high group were included, which yielded the 80-item force choice scale.

Scores on this instrument from a population of 1183 fourth, sixth, eighth, tenth, and twelfth grade children were used to establish norms. The mean of the normative sample is 51.84, standard deviation 13.87. The median is 53.43. The manual includes other normative data based on smaller groups.

Initially, the authors report that content validity was to be built into the scale. This was to have been done by defining the universe according to childrens' self-likes and self-dislikes as reported by Jersild (1952). But because of the subsequent dropping of non-discriminatory items, this was not feasible. Therefore, concurrent validity and rating correspondence coefficients are reported in the manual. These are presented in Table 7.

Table 7

Concurrent Validity Coefficients for the Piers-Harris Children's Self-Concept Scale

Measure	Pearson r with the P-H CSCS Total Score	Reference
Lipsitt Childrens' Self-Concept Scale	+.68 (p<.01)	Mayer, 1968
Health Problems	-.48 (p<.01)	Cox, 1966
Big Problems on SRA Junior Inventory	-.64 (p<.01)	Cox, 1966
Teacher Ratings		
Boys	+.06 (Not Significant)	Piers, 1965
Girls	+.41 (p<.01)	Piers, 1965
Peer Ratings		
Boys	+.26 (Not Significant)	Piers, 1965
Girls	+.41 (p<.01)	Piers, 1965
Socially Effective Behavior		
Teacher Rating	+.43 (p<.01)	Cox, 1966
Peer Rating	+.31 (p<.01)	Cox, 1966
Superego Strength		
Teacher Rating	+.40 (p<.01)	Cox, 1966
Peer Rating	+.42 (p<.01)	Cox, 1966

(Piers, 1969, p. 7)

A two and four month test - retest reliability coefficient is reported by Wing (1966) to be +.77. This was computed on responses gleaned from 244 male and female fifth graders. Piers and Harris (1964) report K-R 21 reliability coefficients of +.90 and +.93 for third grade females and males, respectively.

The authors of the scale investigated its structure by means of a multiple-factor analysis. Responses from a sample of 457 sixth grade children were intercorrelated. Six interpretable factors emerged, accounting for 42 per cent of the variance. Labeling of the factors presented below in order of size was accomplished by considering the content of the items. I. Behavior (18 items); II. Intellectual and School Status (18 items); III. Physical Appearance and Attributes (12 items); IV. Anxiety (12 items); V. Popularity (12 items); VI. Happiness and Satisfaction (8 items). The sums of these items checked by a respondent yields a "Cluster Score." Thus far, only tentative data exist on the use of these cluster scores. Piers reports in the manual (Piers, 1969) that among a fourth and sixth grade population, boys rated themselves significantly lower on Anxiety (denial of feelings of anxiety) and Behavior scales than did girls. The author indicates that further research utilizing the cluster scores is desirable.

The available research evidence does not support the assumption that children of low economic status will have lower self-concepts than children of higher socio-economic status. Carter (1968) investigated possible differences in self-concept as measured by a five-point semantic differential. The subjects were all ninth graders, 190 Mexican-Americans and 90 Anglos. Analysis of the data

failed to show significant differences in self-concept between the two groups. Soares and Soares (1969) completed a comparative study of the self perceptions of 229 disadvantaged and 285 advantaged elementary school children. A twenty-adjective semantic differential was employed. The subjects responded to the items five different ways: (1) as self-concept; (2) as ideal self-concept; (3) self as seen by classmates; (4) self as seen by teachers; and (5) self as seen by parents. The results indicate that the disadvantaged student held more positive perceptions of the self than did the advantaged subjects. No statistically significant differences were observed between sexes. Kerensky (1967) reports similar results to those of Carter. Four hundred and fifty-two third through sixth grade inner-city children were administered the Coopersmith Self Esteem Inventory. The subjects were randomly selected from schools in low socioeconomic areas in Flint, Michigan. The self esteem scores were compared with those provided by Coopersmith (1959). Kerensky reports the inner-city populations' scores were not significantly different from the normative scores. The Piers-Harris Children's Self-Concept Scale was used by Sisenwein (1970) to test for differences in self-concept scores between races. Two hundred and ninety-four white and one hundred black fifth and sixth graders served as the sample population. All subjects attended the same school. No significant differences in mean self-concept scores were observed between the two groups.

Summary of the Literature

1. The volume of published studies concerning the relationship between self-concept and achievement among gifted elementary school children has declined since 1968. Judging from the available literature, writers have turned their attentions toward designing and implementing educational prescriptions and special curricula for gifted students, as federal, state, and local funding has become available for such programs.
2. Very few operational definitions of gifted children are present in the literature. A rationale for an operational definition of giftedness based on Guilford's structure of intellect as measured by the Wechsler Intelligence Scale for Children - Revised is presented in Chapter II.
3. Methods used to identify gifted students vary with respect to validity and reliability. Suggestions regarding thorough procedures for identifying gifted persons have been presented.
4. Intellectually, gifted children exhibit superior abilities in auditory and visual memory, figure-ground configuration, sequencing and interpretation of visual stimuli, three-dimensional visual closure and spatiality, concept formation, and high level cognitive-reasoning capability.

5. Under optimal learning conditions, gifted children may be anticipated to be performing academically at a level two years above chronological age expectations.
6. The self-concept is postulated as a functional variable in academic achievement.
7. Numerous non-intellective factors and specific aspects of the personality have been associated with underachievement, primarily in gifted adolescents. Among gifted elementary school children, variables tangential to the self-concept have been demonstrated among underachievers.
8. The literature cited indicates that a significant positive relationship may exist between a poor self-concept and academic underachievement among adolescents. The literature concerning the dimensions of self-concept and achievement among elementary school gifted children is inconclusive.
9. There has not been established a significant positive relationship between underachievement and poor self-concept among a population of gifted elementary children. Among studies reported, the majority employ teachers' grades as achievement criteria. Teachers' grades may not be consistent form teacher to teacher, or possibly from grading period to grading period. Group tests of intelligence are commonly reported as measures to identify the

population with regard to intellect. Primarily white male sample populations have been used to investigate the question of the relationship between self-concept and achievement.

CHAPTER III

DESIGN OF THE STUDY

The phenomenological school of psychology as represented by Rogers (1947, 1951, 1962) and Combs and Snygg (1959) provided the theoretical bases underlying this study. Self-concept is operationally defined as expressed evaluative perceptions of the self by a child with respect to behavior at home and school, feelings of intellectual and school status, feelings about physical appearance and attributes, expressions of anxiety, popularity among peers, and general feelings of happiness and satisfaction, as measured by the Piers-Harris Children's Self-Concept Scale (Piers, 1969).

The basic assumption of this study is that academic achievement may be a function not only of intellective variables, but of non-intellective variables, specifically the self-concept, as well (Terman, 1926; Tuel and Wursten, 1965; Anderson, 1961; Miller, 1961; Brookover, 1967). This study investigates the relationship between self-concept and academic achievement in the gifted elementary school child.

Sample

Third through fifth grade elementary school children in a north central Florida school district comprised the sample pool. The children were drawn from the 21 elementary schools in the district. The schools were representative of the general population with respect to demographic variables of socio-economic status and urban - rural location. Eleven schools were of low socio-economic status (average family income reported below $4,000.00 per year). Six schools were of middle socio-economic status (average family income reported between $4,001.00 and $7,500.00 per year). Four schools were of high socio-economic status (average family income above $7,500.00 per year)(Income classifications as used by the school district, based on 1960 U. S. Census Bureau statistics). Seven of the low socio-economic status schools were in rural areas and 4 were in an urban area. Two middle socio-economic status schools were in rural areas, and 4 were in urban areas. Three upper socio-economic status schools were in urban areas, and 1 was in a rural area.

Nomination Procedure: Children were nominated for the sample pool through the following procedures: (1) teacher nomination; (2) counselor nomination; (3) school principal nomination; (4) parent nomination; (5) examination of previous school district-wide test data (OLMAT I. Q. scores of 115 or above; scores above the 85th percentile on the

Metropolitan Readiness Test. administered in September of the first grade; scores above the 85th percental on the Comprehensive Test of Basic Skills, administered in April of the second grade). Additionally, all school counselors were instructed to ask children tested (see screening procedure) if they knew of a classmate or peer who might do as well on the test as they did (Dunlap, 1967).

Screening Procedure: The Slosson Intelligence Test (Slosson, 1963) was employed to screen "false positives." This screening instrument was individually administered to all children in the nominated pool by certified elementary school counselors. Children who scored at or above 140 ratio I. Q. on the Slosson Intelligence Test were administered the battery of tests outlined in the Instruments section according to the procedures in the Data Collection section.

Final Selection Procedure: Children who reached the criterion on the previous measure were administered the Wechsler Intelligence Scale for Children - Revised. Those who obtained a Wechsler Intelligence Scale for Children - Revised Full Scale I. Q. equal to or better than 125 were included in the final sample.

Instrumentation

The Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974) yields three intelligence deviation scores: Verbal Scale I. Q., Performance Scale I. Q.,

and Full Scale I. Q. There are twelve subtests, two of which are optional. These subtests are listed by Scale. Verbal Scale: Information, Similarities, Arithmetic, Vocabulary, Comprehension, and Digit Span (optional). Performance Scale: Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding A and B, and Mazes (optional). All subtests were administered to the subjects with the exception of Mazes.

The Wide Range Achievement Test (Jastak and Jastak, 1965) is a brief, individually administered test that provides a quick estimate of an individual's general level of academic achievement. Three "grade level equivalent" scores are derived: Reading (reading and pronouncing words correctly); Spelling (spelling words on the test form that are read aloud to the testee); and Arithmetic (pencil-and-paper arithmetic and algebraic computation). There are two levels, Level I for ages 5 through 11 years, and Level II for ages 12 and over.

The Piers-Harris Children's Self-Concept Scale (Piers, 1969) is an 80-item forced choice paper-and-pencil inventory. The sentences are simple declarative statements, 44 of the items worded negatively (e. g., "I behave badly at home"), 36 items worded positively (e. g., "I am a happy person"). Scoring is designed in such a manner so that high scores indicate positive self-concepts, low scores indicate negative self-concepts.

Data Collection

Children reaching the criterion were formally referred to the Department of Psychological Services of the school district. Each child was then tested by a certified school psychologist or school psychometrist assigned to the school from which the referral originated. Each child tested was administered the three instruments (Wechsler Intelligence Scale for Children - Revised, Wide Range Achievement Test, Piers-Harris Children's Self-Concept Scale) in one testing interview.

Treatment of the Data

Since testing of different subjects necessarily occurred on different days, the grade level equivalent scores on the Wide Range Achievement Test were equalized for grade level and date of testing.

The Wide Range Achievement Test norms yield scores expressed in grades, and assuming 10 months in the school year, tenths (Examples: 5.0, 5.1, 5.2, ... 5.9, 6.0). Equalization of Wide Range Achievement Test scores occurred through averaging the three area grade level scores and subtracting the grade level and month during which testing took place from the averaged score. See Figure 1 for an example of this procedure:

Figure 1

Equalization Procedure of Wide Range Achievement Test Scores

WRAT Scores		Average	Grade level and month when tested	Averaged Academic functioning beyond grade level
Spelling:	6.2			
Reading:	6.2	6.0	3rd grade, 1st month	2.9
Arithmetic:	5.6			

Analysis of the Data

Pearson's product-moment correlational technique was applied to the data to test hypotheses one through nine. Hypotheses ten through sixteen were analyzed by means of a 3 x 2 x 2 analysis of variance procedure. These analyses were done to ascertain whether the total self-concept score on the Piers-Harris Children's Self-Concept Scale discriminated to a significant degree among the groupings. The level of significance was set at .05 for these statistical procedures.

CHAPTER IV
ANALYSIS OF THE DATA

The data presented below have been analyzed in accordance with statistical procedures outlined in Chapter III.

Results

One hundred and fifty-three subjects were identified according to procedures outlined in Chapter III. The N's and mean ages for each grouping are presented below in Table 8.

Table 8

N's and Mean Ages
By Sex/Achievement/Grade Groupings

Grouping	N	Mean Age
Total	153	9.51 yrs.
Female	70	9.51 yrs.
Male	83	9.52 yrs.
Achievers	80	9.62 yrs.
Underachievers	73	9.41 yrs.
Female Achievers	37	9.59 yrs.
Male Achievers	43	9.65 yrs.
Female Underachievers	33	9.43 yrs.
Male Underachievers	40	9.39 yrs.
3rd Grade Male Achievers	21	8.15 yrs.
3rd Grade Female Achievers	18	8.40 yrs.
3rd Grade Male Underachievers	17	8.40 yrs.
3rd Grade Female Underachievers	18	8.39 yrs.

Table 8 (Continued)

Grouping	N	Mean Age
4th Grade Male Achievers	11	9.49 yrs.
4th Grade Female Achievers	9	9.83 yrs.
4th Grade Male Underachievers	13	9.47 yrs.
4th Grade Female Underachievers	7	9.50 yrs.
5th Grade Male Achievers	11	11.32 yrs.
5th Grade Female Achievers	10	10.56 yrs.
5th Grade Male Underachievers	10	10.30 yrs.
5th Grade Female Underachievers	8	10.33 yrs.

Hypotheses Tested

The null hypotheses tested and the outcomes of the analyses are as follows:

HO_1: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted children.

The Pearson product-moment coefficient of correlation of +.38 is statistically significant ($p<.05$). Therefore the null hypothesis is rejected.

HO_2: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted males.

The Pearson product-moment coefficient of correlation of +.19 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_3: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted females.

The Pearson product-moment coefficient of correlation of +.63 is statistically significant ($p<.05$). Therefore, the null hypothesis is rejected.

HO_4: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving children.

The Pearson product-moment coefficient of correlation of +.11 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_5: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving females.

The Pearson product-moment coefficient of correlation of +.01 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_6: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted underachieving males.

The Pearson product-moment coefficient of correlation of +.21 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_7: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement

as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving children.

The Pearson product-moment coefficient of correlation of +.07 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_8: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving females.

The Pearson product-moment coefficient of correlation of +.47 is statistically significant ($p<.05$). Therefore, the null hypothesis is rejected.

HO_9: There is no significant relationship between self-concept as measured by the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test among third, fourth, and fifth grade public school gifted achieving males.

The Pearson product-moment coefficient of correlation of +.28 is not statistically significant. Therefore the null hypothesis is not rejected.

Hypotheses 10 through 16 were analyzed by means of a 3 x 2 x 2 analysis of variance procedure. The results of this procedure are presented in Table 9.

Table 9
Analysis of Variance

Source of Variation	Sum of Squares	Degrees Freedom	Mean Square	F Value
Achievement	3430.32	1	3430.32	1284.76*
Sex	7.61	1	7.61	2.85
Grade	312.84	2	156.42	58.58*
Achievement x Sex x Grade	4966.76	2	2483.38	930.10*
Achievement x Sex	3663.17	1	3663.17	1371.90*
Achievement x Grade	3970.63	2	1985.31	743.56*
Sex x Grade	1014.19	2	507.10	189.93*
Error	376.73	141	2.67	
Total	17742.25	152		

*Statistically significant ($p<.05$)

HO_{10}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to achievement.

Inspection of Table 9 (page 62) indicates that the F value of 1284.76 is statistically significant ($p<.05$). Therefore, the null hypothesis is rejected.

HO_{11}: There are no significant differences in gifted children's self-concepts as measured by the

Piers-Harris Children's Self-Concept Scale with respect to sex.

Inspection of Table 9 (page 62) indicates that the F value of 2.85 is not statistically significant. Therefore the null hypothesis is not rejected.

HO_{12}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to grade.

Inspection of Table 9 (page 62) indicates that the F value of 58.58 is statistically significant ($p<.05$). Therefore the null hypothesis is rejected.

HO_{13}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement and sex.

Inspection of Table 9 (page 62) indicates that the F value of 1371.97 is statistically significant ($p<.05$). Therefore the null hypothesis is rejected.

HO_{14}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement and grade.

Inspection of Table 9 (page 62) indicates that the F value of 743.56 is statistically significant ($p<.05$).

Therefore the null hypothesis is rejected.

HO_{15}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of sex and grade.

Inspection of Table 9 (page 62) indicates that the F value of 189.93 is statistically significant ($p<.05$). Therefore the null hypothesis is rejected.

HO_{16}: There are no significant differences in gifted children's self-concepts as measured by the Piers-Harris Children's Self-Concept Scale with respect to the interactions of achievement, sex, and grade.

Inspection of Table 9 (page 62) indicates that the F value of 930.1 is statistically significant ($p<.05$). Therefore the null hypothesis is rejected.

Scheffe's A Posteriori test of pairwise comparisons for unequal N's was used to determine the location of significant differences between means. Level of significance for this test was set at .05. F values are presented in tabular form for each set of calculations. Group means are presented in increasing size to facilitate interpretation of the tables.

Table 10

Scheffe's F Values for Grades

	(Means)	Grade 5 59.18	Grade 3 62.34	Grade 4 62.65
Grade 5	59.18	-	18.91*	20.04*
Grade 3	62.34	-	-	0.184
Grade 4	62.65	-	-	-

*Statistically Significant ($p<.05$), $F>F' = 6.14$

Inspection of Table 10 indicates that the self-concept scores of third and fourth graders were significantly greater than those of fifth graders. The self-concept scores of third and fourth graders were not significantly different.

Table 11

Scheffe's F Values for Interaction of Achievement and Sex

	(Means)	Under-achieving Females 54.95	Under-achieving Males 58.05	Achieving Males 65.33	Achieving Females 67.08
Under-achieving Females	54.95	--	15.22*	174.35*	230.19*
Under-achieving Males	58.05	--	--	90.22*	132.78*
Achieving Males	65.33	--	--	--	22.82*
Achieving Females	67.08	--	--	--	--

*Statistically Significant ($p<.05$), $F>F' = 8.04$

Inspection of Table 11 (page 65) indicates that the self-concept scores of achieving females were significantly greater than self-concept scores of all other groupings. Conversely, the self-concept scores of all groupings were significantly greater than those of underachieving females. The self-concept scores of achieving males were significantly greater than those of all underachievers regardless of sex.

Table 12

Scheffe's F Values for Interaction of Grade and Achievement

	5 UA	4 UA	3 UA	5 A	3 A	4 A
(Means)	52.67	57.05	58.49	64.76	65.8	68.25
5 UA 52.67	--	22.11*	44.05*	171.1*	227.35*	280.59*
4 UA 57.05	--	--	2.77	71.35*	104.27*	47.07*
3 UA 58.49	--	--	--	53.34*	85.9*	127.42*
5 A 64.76	--	--	--	--	1.49	14.62*
3 A 65.8	--	--	--	--	--	8.17
4 A 68.25	--	--	--	--	--	--

*Statistically Significant ($p<.05$), $F>F' = 11.45$

A - Achiever
UA - Underachiever

Inspection of Table 12 indicates that the self-concept scores of achieving fourth graders were significantly greater than those of all underachievers, as well as achieving fifth graders. Third and fifth grade achievers' self-concept scores were significantly greater than those of underachievers. Both third and fourth grade underachievers'

self-concept scores were greater than those of fifth grade underachievers' self-concept scores.

Table 13
Scheffe's F Values for Interaction of Sex and Grade

(Means)	Male 5th 56.81	Female 3rd 59.94	Male 4th 61.79	Female 5th 61.94	Female 4th 63.94	Male 3rd 64.60
Male 5th 56.81	--	13.37*	31.02*	30.71*	57.35*	83.55*
Female 3rd 59.94	--	--	4.85	5.18	19.91*	34.90*
Male 4th 61.79	--	--	--	0.027	5.36	11.47*
Female 5th 61.94	--	--	--	--	4.36	9.26
Female 4th 63.94	--	--	--	--	--	0.55
Male 3rd 64.60	--	--	--	--	--	--

*Statistically Significant ($p<.05$), $F>F' = 11.45$

Inspection of Table 13 indicates that the self-concept scores of all groups were significantly greater than those of fifth grade males. The self-concept scores of third grade males were significantly greater than those of third grade females. Additionally, the self-concept scores of fourth grade females were significantly greater than those of third grade females.

Inspection of Table 14 (page 69) indicates that the self-concept scores of all groups were significantly greater

than those of fifth grade males. The self-concept scores of third grade males were significantly greater than those of third grade females. Additionally, the self-concept scores of fourth grade females were significantly greater than those of third grade females.

Inspection of Table 14 (page 69) indicates that overall, self-concept scores of achievers were significantly greater than those of all underachievers with the exception of male third grade underachievers' self-concept scores. The self-concept scores of achieving fourth grade females were significantly greater than those of all groupings with the exception of achieving female fifth and male fourth graders. Among underachievers, male third graders' self-concept scores were significantly greater than those of all other underachievers regardless of sex or grade. Self-concept scores of underachieving female third and male fifth graders were significantly lower than all other groupings.

Table 14

Scheffe's F Values for Interaction of Grade, Sex, and Achievement

(Means)	5th M UA 50.0	3rd F UA 54.22	4th F UA 55.71	5th F UA 56.0	4th M UA 57.8	3rd M UA 63.0	5th M A 63.0	3rd F A 65.7	3rd M A 65.9	4th M A 66.5	5th F A 66.7	4th F A 70.33
5th M UA 50.0	--	6.34	24.78*	28.5*	53.84*	159.0*	144.8*	233.4*	246.6*	234.5*	232.1*	463.5*
3rd F UA 54.22	--	--	1.87	2.79	13.34	85.42*	75.38*	147.0*	159.2*	148.4*	148.1*	376.8*
4th F UA 55.71	--	--	--	0.06	3.39	44.33*	41.21*	83.49*	89.09*	90.95*	91.81*	204.2*
5th F UA 56.0	--	--	--	--	2.61	42.88*	39.55*	82.40*	88.45*	89.67*	90.46*	208.4*
4th M UA 57.8	--	--	--	--	--	27.84*	25.05*	64.21*	70.13*	70.43*	71.11*	199.6*
3rd M UA 63.0	--	--	--	--	--	--	0	7.90	9.66	12.13	12.88	76.22*
5th M A 63.0	--	--	--	--	--	--	--	6.97	8.47	11.02	11.73	62.88*
3rd F A 65.7	--	--	--	--	--	--	--	--	0.06	0.74	1.01	31.52*
3rd M A 65.9	--	--	--	--	--	--	--	--	--	0.41	0.62	30.37*
4th M A 66.5	--	--	--	--	--	--	--	--	--	--	0.02	16.81
5th F A 66.7	--	--	--	--	--	--	--	--	--	--	--	14.77
4th F A 70.33	--	--	--	--	--	--	--	--	--	--	--	--

*Statistically Significant ($p<.05$), $F>F' = 20.57$

Summary

The sample was composed of 153 third, fourth, and fifth grade public school gifted children. The Wechsler Intelligence Scale for Children - Revised, the Wide Range Achievement Test, and the Piers-Harris Children's Self-Concept Scale were administered to each subject. Pearson's product-moment correlational technique was used to analyze the data for relationships between achievement - self-concept scores for the Total and by Sex/Achievement groupings. A 3 x 2 x 2 analysis of variance was used to test for differences in self-concept scores between and within Achievement/Sex/Grade groupings. Scheffe's A Posteriori test of pairwise comparisons for unequal N's was used to determine the location of significant differences between means. Level of significance for all statistical procedures was set at .05.

Discussion of Results

Statistically significant positive relationships ($p<.05$) were found to exist between self-concept scores on the Piers-Harris Children's Self-Concept Scale and averaged academic achievement as measured by the Wide Range Achievement Test for the total sample, females, and achieving females.

The analysis of variance revealed significant differences between all groupings examined with the exception of between sexes (Table 9, page 62). The Scheffe's tests

revealed that, overall, achievers obtained significantly greater self-concept scores than did underachievers regardless of grade (Table 12, page 66). Third and fourth graders obtained significantly greater self-concept scores than did fifth graders (Table 12, page 66).

Among Achievement/Sex groupings, (Table 11, page 65), the self-concept scores of achieving females were found to be significantly greater than those of other groups. Self-concept scores of achieving males were significantly greater than those of underachievers, regardless of sex. The self-concept scores of all groups were found to be significantly greater than those of underachieving females.

Among Achievement/Grade groupings (Table 12, page 66), the self-concept scores of third, fourth, and fifth grade achievers all were significantly greater than those of fifth grade underachievers.

Among Sex/Grade groupings (Table 13, page 67), self-concept scores of third grade males were significantly greater than those of third grade females, and fourth and fifth grade males. The self-concept scores of all groupings in this interaction were significantly greater than those of fifth grade males.

Among the interaction of Achievement/Sex/Grade (Table 14, page 69), achieving female fourth graders' self-concept scores were significantly greater than those of all other groupings with the exception of achieving fifth grade females

and achieving fourth grade males. All groupings in the interactions of Achievement/Sex/Grade obtained significantly greater self-concept scores than did underachieving female third and male fifth graders. Overall, the self-concept scores of achievers were significantly greater than those of all underachievers with the exception of male third grade underachievers' self-concept scores.

The results of this study indicate that gifted achievers obtained significantly greater self-concept scores than did gifted underachievers. These significant differences have been demonstrated to extend beyond sex/grade groupings as well. A causative factor in these differences between mean self-concept scores may be that early academic success inculcates a strong self-concept for gifted children. Research reported by Gibby and Gibby (1967) supports this view; however, these data were observed among seventh grade age gifted children.

Equally tenable is the assertion that a strong self-concept may ensure high levels of academic achievement for gifted children. Findings reported by Wattenberg and Clifford (1964) and Lamy (1965) support this view. These investigators demonstrated self-concept scores to be significantly related to reading achievement scores among average intelligence kindergarten age children. Although the question of causality is not resolved, the author concludes that high levels of intelligence alone do not ensure accelerated academic achievement. A powerful

reciprocal relationship between self-concept and achievement for gifted children may be in evidence.

Overall, differences in mean self-concept scores based solely on sex were not found to be significant. Other investigators report similar findings for average intelligence populations (Piers and Harris, 1964; Farls, 1967; Piers, 1969). Thus, one may infer that this research population of gifted children is not appreciably different from similarly aged, average intelligence populations in this regard.

In considering the interaction of sex and achievement, however, statistically significant differences emerge. The data presented in Table 11 indicate that gifted achieving females obtained the greatest mean self-concept score, and underachieving females obtained the lowest mean self-concept score. Further, a significant positive relationship between self-concept scores and averaged academic achievement was found to exist for gifted females but not for gifted males in this sample population.

The Department of Special Services Staff (1961) reports that among a population of similarly aged, superior intellect children, no significant relationships between self-concept and achievement were found. The author posits that a major factor in the discrepancy between these results is the use of teacher grades versus demonstrated achievement on an individually administered measure as the dependent variable.

The results of this study suggest that for gifted females of third through fifth grade age, academic achievement is a more acceptable means of winning approval from the self and others than it is for gifted males of these ages. Therefore, success in academic areas may be a more central component in forming a strong self-concept for gifted females than for gifted males of third, fourth, or fifth grade age. However, Fink (1962), Haarer (1964), and Mehta (1968) report that for high school age students, significant positive relationships between self-concept and achievement were found to exist for males but not for females. This observation suggests that the function of academic achievement as a central component in self-concept may shift in sex relatedness with increasing age. Haarer (1964) suggests that this shift is observable in the eighth grade. However, inspection of Table 14 indicates that this shift in sex relatedness may begin as early as the fifth grade, as evidenced by the mean self-concept score of gifted underachieving fifth grade males.

Additionally, this research has demonstrated that the mean self-concept scores of gifted children in grades three and four are significantly greater than the mean self-concept score of gifted children in grade five. This difference in mean self-concept score among gifted children in these grades has also been observed among samples of children with average intelligence (Piers and Harris, 1964; Piers, 1969). Morse, (1963), Brookover

et al. (1967), and Yamamoto et al. (1969) have concluded that the decline in self-concept scores may be a result of exposure to punitive and threatening school environments. For whatever explanation posited, this phenomenon appears to exist notwithstanding differences in intelligence.

Correlational data presented in Appendix XV is a summation of an investigation into the relationship between WISC-R I. Q. scales and averaged WRAT and specific subject area academic achievement. Perhaps the most salient feature of these findings is the inconsistency evidenced. This suggests that the relationship between these variables is complex and warrants further investigation.

Limitations

1) The possibility exists that all gifted public school children in the grades examined were not identified as a result of the preliminary nomination procedures. Of the children included in the study, about 65% (100 subjects) of the sample were referred by teachers, principals, or counselors specifically for intelligence testing. Twelve percent of the sample identified (18 subjects) were referred for behavior problems. Among these subjects, 13 were defined as underachievers. The remaining 23% of the sample (35 subjects) were not primarily identified by school personnel, but were nominated for testing through inspection of county-wide group testing data. Thus, gifted children who are inordinately quiet and undemonstrative or children who exhibit classroom behavior problems may be ignored by teaching personnel or misidentified as emotionally or behaviorally disturbed.

An additional factor mitigating against identification of all gifted students may have been differences in levels of teacher interest in nominating gifted students. Judging from the number of children identified by grade (third grade - 74 subjects; fourth grade - 40 subjects; fifth grade - 39 subjects) it appears that third grade teachers were more highly motivated and/or informed about characteristics of the gifted child than were teachers in fourth and fifth grades. Additionally, in several schools fourth and fifth grades are taught by team

teaching. The resulting inference is that a teacher may not have enough exposure to a student in order to adequately become familiar with that student's full range of abilities.

2) Because fairly large differences existed between numbers of subjects identified by grade, the sizes of the cells analyzed varied considerably. Thus, the experimenter feels that the differences between means where small N's are observed may not be fully representative of population differences. Additionally, equivalently sized cells would have allowed the use of Tukey's HSD test, a less conservative test than is the Scheffe's test.

3) Finally, this study was associational in design, and offered no treatments to the sample studied. Thus, no statements may be made concerning causality among the variables investigated.

CHAPTER V
SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to investigate the relationship between self-concept and academic achievement in third, fourth, and fifth grade public school gifted children. The data were further analyzed to test for significant differences between self-concept scores by achievers-underachievers, males-females, grades, and interactions.

The sample consisted of 153 children in a North Central Florida school district. They were identified as gifted through individual administration of the Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974). The criterion level was set at Full Scale I. Q. equal to or greater than 125. Achievement was measured through individual administration of the Wide Range Achievement Test (Jastak and Jastak, 1965). Gifted children obtaining averaged academic achievement two years above grade level expectations on this measure were defined as achievers. Gifted children not obtaining averaged academic achievement two years above grade level expectations were defined as underachievers. Self-concept was measured by the Piers-Harris Children's Self-Concept Scale (Piers, 1969).

Pearson's product-moment correlational technique was used to test for relationships between the variables investigated. A 3 x 2 x 2 analysis of variance was used to test for differences in self-concept scores by Achievement/Sex/Grade. Scheffe's A Posteriori test of pairwise comparisons for unequal N's was used to determine the location of significant differences between means. Level of significance was set at .05.

Statistically significant positive relationships ($p<.05$) were found to exist between self-concept scores and averaged academic achievement for the total sample, females and achieving females. When differences between group means of self-concept scores were examined, it was found that achievers, regardless of sex or grade, obtained significantly greater self-concept scores than underachievers. In general, achieving females' self-concept scores were consistently greater than those of all other groups. The self-concept scores of underachieving females were consistently lower than those of all other groups. Further, a general trend was observed in the direction of decreasing self-concept scores for fifth grade subjects.

Implications

The most consistently significant results of this investigation have special application for school psychologists and elementary school counselors.

The results of this study suggest that significant differences in self-concept scores exist between gifted children who are performing at high levels of academic achievement and those who are not performing at high levels of academic achievement. Thus, when the results of a psycho-educational evaluation for a particular student indicate high intelligence scores and low achievement levels, an educational prescription should include further investigation of that student's self-concept. The practitioner may expect that gifted students in the fifth grade will obtain a somewhat lower score on a self-concept inventory than gifted students in the third or fourth grades.

The statement may also be made that, in general, a gifted child who is achieving consistently well above grade level may be expected to score high on a self-concept scale. The predictive validity of this finding is attenuated for male fifth grade gifted students. For female gifted students, achievement levels at or slightly above grade level expectations may be predictive of low scores on a self-concept scale. Conversely, a female gifted student who exhibits achievement levels two or more years beyond grade level expectations may also be expected to obtain a high score on a self-concept scale.

The results of this study also indicate that the mean self-concept score of fifth grade gifted children is significantly lower than the mean self-concept scores of third and fourth grade gifted children. Additionally, it appears that the decline in mean self-concept score is more pronounced for underachieving fifth graders than for achieving fifth graders. Further, the decline in mean self-concept scores among gifted underachieving fifth grade students is more pronounced for males than for females. It would appear then, that various counseling approaches and classroom reinforcement techniques for this population should be examined, and if found effective, should be implemented.

These data also have significance for coordinators of programs for gifted students. The data gathered suggest that exposure to structured academic situations is beneficial in varying degrees for gifted third, fourth, and fifth grade children. Inspection of Appendix II indicates that for gifted achieving subjects, as grade level increased, the mean reading and spelling achievement level increased proportionately. To illustrate, for achieving third graders, mean years of academic achievement above grade placement for spelling was 3.32; for reading, 4.05. For achieving fourth graders, mean years of academic achievement above grade placement for spelling was 3.63; for reading, 4.71. For achieving fifth graders, mean years of academic achievement above grade placement for spelling was 4.75; for

reading, 5.52. This increase was not true, however, for arithmetic achievement levels.

The increase in academic achievement with increased exposure to structured academic situations was not observed among underachieving subjects. In fact, mean years of academic achievement above grade level decreased for spelling (3rd graders: 1.31 years; 4th graders: 1.23 years; 5th graders: 0.96 years), while the mean years above grade level for reading achievement were varied (3rd graders: 1.86 years; 4th graders: 2.11 years; 5th graders: 2.04 years).

These raw data illustrate several points. First, procedures to identify the gifted child that are based solely on teacher grades or on demonstrated competencies on individual or group achievement tests may not identify all gifted students, and may potentially ignore those gifted students most in need of special tuition or attention. Second, all students with superior intellect have not benefited to similar degrees from the academic situations to which they have been exposed. Investigation into alternative learning situations for these gifted students appears to be necessary.

These findings indicate the existence of significant differences between self-concept scores of gifted achievers and underachievers. The results suggest that curriculum planning to meet the needs of gifted students should include consideration of both the affective and cognitive domains.

A "team approach" to curriculum planning may be helpful in accomplishing this end. The teacher, school counselor, school psychologist, consultant for gifted child education, parents, and the gifted child should play an active role in determining appropriate designs.

Suggestions for Further Research

1) Continued use of the instruments and criteria employed in this study is recommended. Thus, standardization of selection procedure could be approximated, which would enhance the generalizability of findings reported.

2) Familiarization of referring personnel with characteristics of gifted children would be helpful to ensure the identification of a complete sample of gifted students.

3) Investigation of the relative efficacy of various intervention plans should now be conducted. Several specific recommendations include manipulation of parent expectations, employment of teacher classroom guidance, and direct individual and/or group counseling of gifted students by elementary school counselors.

4) If pre-tests measuring self-concept and achievement are to be administered, the investigator should consider the use of an analysis of covariance in treating the data. This would control for the effect of testing on the treatments being offered.

APPENDIX I

Means, Standard Deviations, and Ranges of the Piers-Harris Children's Self-Concept Scale Total Score

Groupings	N	$\bar{X}$	S.D.	Range
Total	153	61.6	10.8	32-79
Female	70	61.4	10.3	32-78
Male	83	61.8	11.2	33-79
Achievers	80	66.1	9.2	44-79
Underachievers	73	56.7	10.3	32-79
Female Achievers	37	67.1	8.8	44-78
Male Achievers	43	65.3	9.5	45-79
Female Underachievers	33	54.9	7.8	32-70
Male Underachievers	40	58.1	11.8	33-79
3rd Grade Male Achievers	21	65.9	9.5	47-79
3rd Grade Female Achievers	18	65.7	10.6	44-77
3rd Grade Male Underachievers	17	63.0	11.3	48-79
3rd Grade Female Underachievers	18	54.2	9.3	32-70
4th Grade Male Achievers	11	66.5	9.6	45-77
4th Grade Female Achievers	9	70.3	8.3	51-78
4th Grade Male Underachievers	13	57.8	11.5	34-75
4th Grade Female Underachievers	7	55.7	6.5	47-62
5th Grade Male Achievers	11	63.0	9.9	47-77
5th Grade Female Achievers	10	66.7	5.2	60-75
5th Grade Male Underachievers	10	50.0	8.5	33-61
5th Grade Female Underachievers	8	56.0	5.7	42-59

APPENDIX II

Means For Overall And Subject Area Academic Functioning As Measured By The Wide Range Achievement Test

Grouping	N	Overall	Spelling	Reading	Arithmetic
Total	153	2.34	2.52	3.34	1.14
Female	70	2.50	2.71	3.48	1.27
Male	83	2.21	2.36	3.23	1.02
Achievers	80	3.35	3.75	4.59	1.68
Underachievers	73	1.24	1.18	1.98	0.54
Female Achievers	37	3.54	3.92	4.81	1.83
Male Achievers	43	3.19	3.60	4.40	1.55
Female Underachievers	33	1.34	1.35	1.99	0.65
Male Underachievers	40	1.15	1.03	1.96	0.46
3rd Grade Male Achievers	21	2.84	3.22	3.78	1.51
3rd Grade Female Achievers	18	3.21	3.41	4.32	1.82
3rd Grade Male Underachievers	17	1.09	0.98	1.88	0.36
3rd Grade Female Underachievers	18	1.42	1.63	1.84	0.76
4th Grade Male Achievers	11	3.5	3.85	4.81	1.85
4th Grade Female Achievers	9	3.14	3.41	4.6	1.4
4th Grade Male Underachievers	13	1.32	1.36	2.05	0.54
4th Grade Female Underachievers	7	1.29	1.09	2.17	0.59
5th Grade Male Achievers	11	2.91	4.1	5.18	1.33
5th Grade Female Achievers	10	4.5	5.39	5.86	2.24
5th Grade Male Underachievers	10	1.03	0.93	1.90	0.50
5th Grade Female Underachievers	8	1.20	0.98	2.18	0.45

NOTE: The values in this table reflect achievement grade levels beyond present grade placement.

APPENDIX III

Means And Standard Deviations of WISC-R Scale I. Q.'s By Sex/Grade/Achievement

Grouping	N	Verbal I. Q. $\bar{X}$	Verbal I. Q. S.D.	Performance I. Q. $\bar{X}$	Performance I. Q. S.D.	Full I. Q. $\bar{X}$	Full I. Q. S.D.
Total	153	128.5	8.7	124.8	5.9	129.7	4.8
Female	70	128.8	8.10	124.9	11.8	129.8	4.9
Male	83	128.4	9.3	124.7	7.5	129.6	6.4
Achievers	80	129.8	10.0	124.8	10.3	130.4	5.4
Underachievers	73	127.2	6.9	124.7	6.4	128.9	4.1
Female Achievers	37	129.0	9.0	126.0	17.5	130.4	5.7
Male Achievers	43	130.5	10.8	123.8	7.9	130.3	5.2
Female Underachievers	33	128.5	7.0	123.6	5.6	129.1	3.9
Male Underachievers	40	126.1	9.2	125.7	6.9	128.7	4.2
3rd Grade Male Achievers	21	130.1	6.5	123.1	8.4	129.5	4.3
3rd Grade Female Achievers	18	132.3	10.3	123.7	5.9	131.1	7.1
3rd Grade Male Underachievers	17	126.2	7.8	126.9	6.4	129.4	5.3
3rd Grade Female Underachievers	18	127.2	7.4	125.1	4.9	129.2	4.0
4th Grade Male Achievers	11	132.1	10.0	124.91	8.1	132.0	6.5
4th Grade Female Achievers	9	126.78	5.5	128.44	8.5	130.3	5.1

Appendix III (Continued)

Grouping	N	Verbal I. Q. $\bar{X}$	Verbal I. Q. S.D.	Performance I. Q. $\bar{X}$	Performance I. Q. S.D.	Full I. Q. $\bar{X}$	Full I. Q. S.D.
4th Grade Male Underachievers	13	126.38	6.1	125.46	8.4	128.77	3.7
4th Grade Female Underachievers	7	131.86	6.7	118.43	5.5	128.43	5.1
5th Grade Male Achievers	11	129.64	17.3	123.91	7.5	130.27	5.6
5th Grade Female Achievers	10	124.9	7.2	127.9	7.7	129.3	2.7
5th Grade Male Underachievers	10	125.5	6.3	123.8	6.0	127.5	1.9
5th Grade Female Underachievers	8	128.63	6.0	124.75	5.2	129.63	2.9

APPENDIX IV

Means And Standard Deviations For The WISC-R Subtest Information By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	15.1	1.35
Females	70	15.2	1.23
Males	83	15.1	2.01
Achievers	80	15.4	1.95
Underachievers	73	14.9	1.23
Female Achievers	37	15.2	1.95
Male Achievers	43	15.6	1.95
Female Underachievers	33	15.2	1.21
Male Underachievers	40	14.6	1.94
3rd Grade Male Achievers	21	15.5	1.96
3rd Grade Female Achievers	18	15.6	2.73
3rd Grade Male Underachievers	17	14.8	3.11
3rd Grade Female Underachievers	18	15.3	2.44
4th Grade Male Achievers	11	15.9	2.11
4th Grade Female Achievers	9	15.1	1.64
4th Grade Male Underachievers	13	15.3	1.87
4th Grade Female Underachievers	7	16.3	1.43
5th Grade Male Achievers	11	16.0	2.10
5th Grade Female Achievers	10	15.0	1.58
5th Grade Male Underachievers	10	13.7	2.29
5th Grade Female Underachievers	8	13.9	1.71

APPENDIX V

Means And Standard Deviations For The WISC-R Subtest Comprehension By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	14.3	2.38
Females	70	14.3	2.69
Males	83	14.3	2.09
Achievers	80	14.1	2.44
Underachievers	73	14.5	2.32
Female Achievers	37	13.7	2.61
Male Achievers	43	14.6	2.02
Female Underachievers	33	14.9	2.78
Male Underachievers	40	14.1	1.83
3rd Grade Male Achievers	21	15.0	2.24
3rd Grade Female Achievers	18	13.9	2.73
3rd Grade Male Underachievers	17	12.8	5.21
3rd Grade Female Underachievers	18	13.5	2.74
4th Grade Male Achievers	11	14.1	2.42
4th Grade Female Achievers	9	13.7	2.02
4th Grade Male Underachievers	13	14.3	4.64
4th Grade Female Underachievers	7	15.4	2.06
5th Grade Male Achievers	11	14.7	2.15
5th Grade Female Achievers	10	13.6	3.1
5th Grade Male Underachievers	10	15.1	1.36
5th Grade Female Underachievers	8	15.7	2.92

APPENDIX VI

Means And Standard Deviations For The WISC-R Subtest Arithmetic By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	13.8	2.71
Females	70	14.1	2.17
Males	83	13.6	3.16
Achievers	80	14.1	3.25
Underachievers	73	13.7	2.22
Female Achievers	37	14.0	2.24
Male Achievers	43	14.1	3.97
Female Underachievers	33	14.3	2.12
Male Underachievers	40	13.2	2.21
3rd Grade Male Achievers	21	13.9	5.13
3rd Grade Female Achievers	18	14.9	1.1
3rd Grade Male Underachievers	17	13.4	2.6
3rd Grade Female Underachievers	18	14.6	2.37
4th Grade Male Achievers	11	15.2	2.37
4th Grade Female Achievers	9	13.8	2.26
4th Grade Male Underachievers	13	13.3	2.06
4th Grade Female Underachievers	7	14.4	2.23
5th Grade Male Achievers	11	13.3	2.5
5th Grade Female Achievers	10	13.3	1.78
5th Grade Male Underachievers	10	13.0	1.70
5th Grade Female Underachievers	8	14.1	1.56

APPENDIX VII

Means And Standard Deviations For The WISC-R Subtest Similarities By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	15.1	1.81
Females	70	15.1	2.25
Males	83	15.1	1.35
Achievers	80	15.3	1.80
Underachievers	73	14.8	1.81
Female Achievers	37	15.2	2.74
Male Achievers	43	15.4	0.52
Female Underachievers	33	14.9	2.11
Male Underachievers	40	14.7	2.02
3rd Grade Male Achievers	21	15.0	2.19
3rd Grade Female Achievers	18	16.1	2.52
3rd Grade Male Underachievers	17	15.4	2.01
3rd Grade Female Underachievers	18	15.1	2.03
4th Grade Male Achievers	11	15.6	1.96
4th Grade Female Achievers	9	14.4	2.56
4th Grade Male Underachievers	13	14.6	2.11
4th Grade Female Underachievers	7	14.5	1.27
5th Grade Male Achievers	11	15.7	2.01
5th Grade Female Achievers	10	15.1	3.23
5th Grade Male Underachievers	10	14.1	1.99
5th Grade Female Underachievers	8	15.1	1.72

APPENDIX VIII

Means And Standard Deviations For The WISC-R Subtest Vocabulary By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	14.5	1.78
Females	70	14.5	1.55
Males	83	14.5	1.97
Achievers	80	14.5	2.08
Underachievers	73	14.5	1.41
Female Achievers	37	14.4	2.11
Male Achievers	43	14.6	2.08
Female Underachievers	33	14.6	0.36
Male Underachievers	40	14.5	1.89
3rd Grade Male Achievers	21	14.5	2.09
3rd Grade Female Achievers	18	15.3	2.34
3rd Grade Male Underachievers	17	14.9	2.56
3rd Grade Female Underachievers	18	14.1	1.50
4th Grade Male Achievers	11	15.1	2.02
4th Grade Female Achievers	9	14.0	1.32
4th Grade Male Underachievers	13	14.4	1.94
4th Grade Female Underachievers	7	15.5	1.63
5th Grade Male Achievers	11	14.2	2.16
5th Grade Female Achievers	10	13.9	2.03
5th Grade Male Underachievers	10	14.1	1.20
5th Grade Female Underachievers	8	14.3	1.50

APPENDIX IX

Means And Standard Deviations For The WISC-R Subtest Digit Span By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	12.5	2.30
Females	70	12.8	1.77
Males	83	12.2	2.62
Achievers	80	13.0	2.09
Underachievers	73	12.0	2.40
Female Achievers	37	13.1	0.56
Male Achievers	43	12.9	2.80
Female Underachievers	33	12.5	2.49
Male Underachievers	40	11.5	2.20
3rd Grade Male Achievers	21	13.5	2.60
3rd Grade Female Achievers	18	14.6	2.48
3rd Grade Male Underachievers	17	12.1	2.21
3rd Grade Female Underachievers	18	13.4	1.20
4th Grade Male Achievers	11	12.6	3.44
4th Grade Female Achievers	9	13.1	1.81
4th Grade Male Underachievers	13	11.0	1.81
4th Grade Female Underachievers	7	12.8	1.21
5th Grade Male Achievers	11	12.6	2.62
5th Grade Female Achievers	10	11.6	1.78
5th Grade Male Underachievers	10	11.5	2.69
5th Grade Female Underachievers	8	11.3	2.44

APPENDIX X

Means And Standard Deviations For The WISC-R Subtest Picture Completion By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	13.0	2.41
Females	70	12.7	2.21
Males	83	13.3	2.57
Achievers	80	12.9	2.31
Underachievers	73	12.9	2.53
Female Achievers	37	12.9	2.00
Male Achievers	43	13.0	2.44
Female Underachievers	33	12.4	2.28
Male Underachievers	40	13.5	2.68
3rd Grade Male Achievers	21	11.8	2.49
3rd Grade Female Achievers	18	13.1	2.13
3rd Grade Male Underachievers	17	13.4	3.06
3rd Grade Female Underachievers	18	12.7	2.08
4th Grade Male Achievers	11	14.0	2.33
4th Grade Female Achievers	9	12.5	2.65
4th Grade Male Underachievers	13	13.6	2.63
4th Grade Female Underachievers	7	10.9	1.96
5th Grade Male Achievers	11	13.3	3.36
5th Grade Female Achievers	10	13.3	2.00
5th Grade Male Underachievers	10	13.6	2.41
5th Grade Female Underachievers	8	13.8	2.31

APPENDIX XI

Means And Standard Deviations For The WISC-R Subtest Picture Arrangement By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	13.2	2.99
Females	70	13.5	2.08
Males	83	13.2	3.58
Achievers	80	13.3	2.45
Underachievers	73	13.5	3.47
Female Achievers	37	13.7	2.17
Male Achievers	43	12.8	2.63
Female Underachievers	33	13.3	1.34
Male Underachievers	40	13.7	4.40
3rd Grade Male Achievers	21	13.3	2.68
3rd Grade Female Achievers	18	14.4	2.41
3rd Grade Male Underachievers	17	14.9	2.30
3rd Grade Female Underachievers	18	13.5	1.72
4th Grade Male Achievers	11	12.6	3.04
4th Grade Female Achievers	9	13.4	1.93
4th Grade Male Underachievers	13	12.6	2.43
4th Grade Female Underachievers	7	13.7	0.95
5th Grade Male Achievers	11	12.6	2.20
5th Grade Female Achievers	10	13.4	1.95
5th Grade Male Underachievers	10	11.7	7.61
5th Grade Female Underachievers	8	12.7	2.96

APPENDIX XII

Means And Standard Deviations For The WISC-R Subtest Block Design By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	14.0	2.91
Females	70	14.1	2.17
Males	83	13.9	3.41
Achievers	80	14.1	3.56
Underachievers	73	14.1	1.97
Female Achievers	37	14.0	2.37
Male Achievers	43	14.1	4.34
Female Underachievers	33	14.3	1.93
Male Underachievers	40	13.8	2.01
3rd Grade Male Achievers	21	13.7	1.87
3rd Grade Female Achievers	18	13.7	2.31
3rd Grade Male Underachievers	17	14.4	2.00
3rd Grade Female Underachievers	18	14.6	1.88
4th Grade Male Achievers	11	13.8	2.16
4th Grade Female Achievers	9	14.3	3.24
4th Grade Male Underachievers	13	13.7	2.24
4th Grade Female Underachievers	7	14.2	1.80
5th Grade Male Achievers	11	14.7	1.85
5th Grade Female Achievers	10	14.0	1.87
5th Grade Male Underachievers	10	13.3	1.55
5th Grade Female Underachievers	8	14.0	2.33

APPENDIX XIII

Means And Standard Deviations For The WISC-R Subtest Object Assembly By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	13.6	1.70
Females	70	13.5	0.72
Males	83	13.7	2.06
Achievers	80	13.6	1.16
Underachievers	73	13.4	1.98
Female Achievers	37	13.6	1.38
Male Achievers	43	13.6	2.03
Female Underachievers	33	13.3	1.79
Male Underachievers	40	13.8	2.10
3rd Grade Male Achievers	21	13.6	2.06
3rd Grade Female Achievers	18	12.8	1.46
3rd Grade Male Underachievers	17	13.2	2.43
3rd Grade Female Underachievers	18	13.1	1.61
4th Grade Male Achievers	11	13.9	2.17
4th Grade Female Achievers	9	14.0	1.94
4th Grade Male Underachievers	13	14.1	1.77
4th Grade Female Underachievers	7	11.8	1.07
5th Grade Male Achievers	11	13.2	2.00
5th Grade Female Achievers	10	14.0	2.39
5th Grade Male Underachievers	10	14.1	1.91
5th Grade Female Underachievers	8	14.1	2.10

APPENDIX XIV

Means And Standard Deviations For The WISC-R Subtest Coding By Grade/Sex/Achievement

Grouping	N	$\bar{X}$	S.D.
Total	153	13.6	2.68
Females	70	13.8	2.55
Males	83	13.3	2.80
Achievers	80	13.9	2.80
Underachievers	73	13.2	2.56
Female Achievers	37	14.4	2.78
Male Achievers	43	13.4	2.82
Female Underachievers	33	13.2	2.27
Male Underachievers	40	13.2	2.79
3rd Grade Male Achievers	21	13.7	2.43
3rd Grade Female Achievers	18	12.3	2.27
3rd Grade Male Underachievers	17	13.2	2.35
3rd Grade Female Underachievers	18	13.9	2.27
4th Grade Male Achievers	11	13.4	3.50
4th Grade Female Achievers	9	15.7	2.43
4th Grade Male Underachievers	13	14.1	3.50
4th Grade Female Underachievers	7	12.8	2.50
5th Grade Male Achievers	11	13.1	3.00
5th Grade Female Achievers	10	15.2	2.35
5th Grade Male Underachievers	10	12.2	2.35
5th Grade Female Underachievers	8	12.8	2.10

APPENDIX XV

Pearson r_{xy}'s Between Wechsler Intelligence Scale for Children - Revised Verbal, Performance, and Full I. Q. Scales and Wide Range Achievement Test Averaged Achievement, Spelling Achievement, Reading Achievement, and Arithmetic Achievement

Grouping	I.Q. Scale	Averaged Achievement	Spelling Achievement	Reading Achievement	Arithmetic Achievement
Total	Verbal	+.21*	+.19	+.16	-.11
	Performance	+.08	+.42*	+.04	+.53*
	Full	+.25*	+.27*	+.25*	+.15
Females	Verbal	-.02	+.07	-.005	+.05
	Performance	+.19	+.55*	+.20	+.08
	Full	+.11	+.26*	+.25*	-.011
Males	Verbal	+.43*	+.29*	+.26*	-.16
	Performance	-.01	+.32*	-.07	+.05
	Full	+.37*	+.28*	+.25*	+.30*
Achievers	Verbal	+.33*	+.16	+.13	+.32*
	Performance	+.16	+.82*	+.07	+.30*
	Full	+.27*	+.33*	+.19	+.91*
Underachievers	Verbal	-.50*	+.01	-.08	-.04
	Performance	-.06	-.09	+.04	-.04
	Full	+.07	-.04	+.34*	-.08
Achieving Females	Verbal	+.22	+.14	+.36*	-.14
	Performance	+.05	+.04	+.004	-.05
	Full	+.01	+.33*	+.19	-.18
Achieving Males	Verbal	+.77*	+.20	+.16	-.43*
	Performance	+.25	+.85*	+.05	+.24
	Full	+.53*	+.39*	+.19	+.46*
Underachieving Females	Verbal	+.04	-.30	-.63*	+.03
	Performance	+.08	+.07	+.22	+.03
	Full	+.05	-.02	+.46*	+.08
Underachieving Males	Verbal	-.61*	+.10	+.31	-.18
	Performance	-.14	-.23	-.69*	-.05
	Full	-.01	-.10	+.25	-.25

* Statistically significant $p<.05$.

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BIOGRAPHICAL SKETCH

Philip R. Yates was born in Wheeling, West Virginia, on January 27, 1946. He married Lauren E. Lucas on March 10, 1973.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

David Lane, Chairman
Professor of Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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